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Journal of the Society of Arts.

FRIDAY, OCTOBER 9, 1868.

Announcements by the Council.

It is with deep regret that the Council have to announce the death of Mr. HARRY CHESTER, a Vice-President of the Society, which took place on Monday last, the 5th instant.

NOTICE TO INSTITUTIONS.

The Reports on the Paris Universal Exhibition, prepared for the Science and Art Department, have been printed, in six volumes, and (with the exception of Vol. I.) are now published. Her Majesty's Government have placed a number of copies at the disposal of the Society of Arts, for distribution to the Institutions in Union, and a copy of the five volumes will be forwarded to each Institution as soon as possible. Volume I. will contain the General Report, with Tables of Statistics, &c.; volumes II., III., IV., V. contain the Reports on the various Classes; and volume VI. the returns relative to the New Order of Reward.

EXAMINATIONS, 1869.

The Programme of Examinations for 1869 is now published, and may be had *gratis* on application to the Secretary of the Society of Arts.

PRIZES.

The Council, at the suggestion of the Food Committee, offer the following prizes for Improved Railway Meat Vans, Milk Vans, and Milk Cans:—

1. For an improved method of conveying meat by rail, the Society's *Silver Medal* and £10.

The object in view is to reduce to a minimum the deterioration which meat now suffers in its transit by rail. The principal evils to be avoided are—excessive changes of temperature, and injuries by pressure, by handling, exposure to dust, insects, &c. This prize may be awarded for an improved railway meat van or for a travelling meat larder suitable for railways.

Model on a scale of half an inch to a foot to be sent in.

2. For an improved method of conveying milk cans by rail, the Society's *Silver Medal* and £10.

The object in view is to reduce to a minimum the deterioration which milk now suffers in its transit by rail in the ordinary open trucks. The principal evils to be avoided are—the heating and shaking of the milk cans.

Model of an improved railway milk van, on a scale of half an inch to the foot, to be sent in.

3. For an improved railway milk can, the Society's *Silver Medal* and £10.

The object in view is to reduce to a minimum the deterioration which milk now suffers in its transit by rail in the ordinary milk cans, or "churns." The principal evils to be avoided are—the heating of the milk, and all motion within the can which may cause the buttery particles to separate.

A specimen of the improved railway milk-can to be sent in.

The models and specimens for competition must be forwarded to the Secretary of the Society of Arts before the 1st February, 1869.

SUBSCRIPTIONS.

The Michaelmas subscriptions are due, and should be forwarded by cheque or Post-office order, crossed "Coutts and Co.," and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of Institutions.

YORKSHIRE UNION OF MECHANICS' INSTITUTES.—*Armley Mechanics' Institute*.—A public meeting, to promote the establishment of science classes, was held in the lecture hall of this institute, on October 2nd. The chair was taken by Mr. J. B. Blackburn, a vice-president of the institution. On the platform was a goodly gathering of the resident employers of labour. After an address by Mr. Henry H. Sales, upon the scheme of the Department of Science and Art, Mr. Gledhill proposed, and the Rev. B. Wood seconded, a resolution, pledging the meeting to support the class about to be established in the institute. A vote of thanks to Mr. Sales for his address, and the usual compliments to the chairman, closed the proceedings.—*Northallerton Mechanics' Institute*.—The twentieth annual meeting was held on October 5th, in the Court-house, kindly lent by the justices of the North Riding. The hall was densely crowded, and a large number of persons were unable to obtain admission. The Right Hon. Lord Teignmouth occupied the chair. In addition to a long address by the chairman, the Vicar gave the history of libraries from the formation of the famed Alexandrian library; Mr. John Hutton, the candidate for the borough, advocated the cause of Mechanics' Institutes; Mr. J. W. Johns, his political opponent and rival, urged the necessity of educational classes; Mr. J. C. Buckmaster deprecated the apathetic indifference of working men in general, and the people of Northallerton in particular, to scientific instruction; and Mr. Henry H. Sales commented upon the speeches of preceding speakers. After the vote of thanks to the chairman, his Lordship said that it augured well for the peaceful character of the ensuing contest, that on the eve of an election all political parties could meet on the same platform, and co-operate in the same good cause. At the conclusion of his remarks the entire audience rose, and sang most lustily "God save the Queen."

EXAMINATION PAPERS, 1868.

(Continued from page 773.)

The following are the Examination Papers set in the various subjects at the Final Examination held in April last:—

GERMAN.

THREE HOURS ALLOWED.

Each candidate is expected to translate one of the extracts in Section I., to answer four of the questions in Section II., and to turn into German twelve of the sentences

given in Section III. Candidates for a First Class must translate two pieces in Section I., one prose, the other poetry; answer (e) and (f) of Section II.; render into German 17-20, inclusive, of Section III., and work out the whole of Section IV.:—

SECTION I.

1. Wilhelm war drei und zwanzig Jahre alt, als Karl die Regierung niederlegte, und hatte schon zwei öffentliche Beweise der höchsten Achtung von ihm erhalten. Ihm übertrug er, mit Ausschließung aller Groszen seines Hofes, das ehrenvolle Amt, seinem Bruder Ferdinand die Kaiserkrone zu überbringen. Als der Herzog von Savoyen, der die kaiserliche Armee in den Niederlanden commandirte, von seinen eigenen Landesangelegenheiten nach Italien abgerufen ward, vertraute der Kaiser ihm den Oberbefehl über diese Truppen an, gegen die Vorstellungen seines ganzen Kriegsraths, denen es allzu gewagt schien, den erfahrenen französischen Feldherren einen Jüngling entgegen zu setzen. Abwesend und von Niemand empfohlen zog ihn der Monarch der lorbeerovollen Schaar seiner Helden vor, und der Ausgang liesz ihn seine Wahl nicht bereuen.

Die vorzügliche Gunst, in welcher dieser Prinz bei dem Vater gestanden hatte, wäre allein schon ein wichtiger Grund gewesen, ihn von dem Vertrauen seines Sohnes auszuschließen. Philipp, scheint es, hatte es sich zum Gesetz gemacht, den spanischen Adel an dem niederländischen wegen des Vorzugs zu rächen, wodurch Karl der Fünfte diesen letztern stets unterschieden hatte. Aber wichtiger waren die geheimen Beweggründe, die ihn von dem Prinzen entfernten.

2. Nicht Stimmenmehrheit ist des Rechtes Probe:
England ist nicht die Welt, dein Parlament
Nicht der Verein der menschlichen Geschlechter.
Dies heut'ge England ist das künft'ge nicht,
Wie's das vergangne nicht mehr ist—Wie sich
Die Neigung anders wendet, also steigt
Und fällt des Urtheils wandelbare Woge.
Sag' nicht, du müssest der Nothwendigkeit
Gehorchen und dem Dringen deines Volks
Sobald du willst, in jedem Augenblick
Kannst du erproben, dasz dein Wille frei ist:
Versuch's! Erkläre, dasz du Blut verabscheust,
Der Schwelster Leben willst gerettet sehn,
Zeig' denen, die dir anders rathen wollen,
Die Wahrheit deines königlichen Zorns:
Schnell wirst du die Nothwendigkeit verschwinden
Und Recht in Unrecht sich verwandeln sehn.
Du selbst muszt richten, du allein. Du kannst dich
Auf dieses unstat schwanke Rohr nicht lehnen.
Der eigne Milde folge du getrost.
Nicht Strenge legte Gott ins weiche Herz
Des Weibes—und die Stifter dieses Reichs,
Die auch dem Weib die Herrscherzüge gaben,
Sie zeigten an, dasz, Strenge nicht die Tugend
Der Könige soll seyn in diesem Lande.

3. Als unerfahrer Knabe kam ich her,
In einem Augenblick, da Fest auf Fest
Ferrara zu dem Mittelpunkt der Ehre
Zu machen schien. O! welcher Anblick war's!
Den weiten Platz, auf dem in ihrem Glanze
Gewandte Tapferkeit sich zeigen sollte,
Umschloz ein Kreis, wie ihn die Sonne nicht
So bald zum zweitenmal bescheinen wird.
Es saszen hier gedrängt die schönsten Frauen,
Gedrängt die ersten Männer unsrer Zeit.
Erstaunt durchlief der Blick die edle Menge;
Man rief: Sie alle hat das Vaterland,
Das Eine, schmale, meerumgebne Land,
Hierher geschickt. Zusammen bilden sie
Das herrlichste Gericht, das über Ehre,
Verdienst und Tugend je entschieden hat.
Gehst du sie einzeln durch, du findest keinen,
Der seines Nachbarn sich zu schämen brauche!—
Und dann eröffneten die Schranken sich:
Da stampften Pferde, glänzten Helm' und Schilde,

Da drängten sich die Knappen, da erklang
Trompetenschall, und Lanzen krachten splitternd,
Getroffen tönten Helm' und Schilde, Staub,
Auf einen Augenblick, umhüllte wirbelnd
Des Siegers Ehre, des Besiegten Schmach.
O, lasz mich einen Vorhang vor das ganze,
Mir allzuhelle Schauspiel ziehen, dasz
In diesem schönen Augenblicke mir
Mein Unwerth nicht zu heftig fühlbar werde!

4. Philipp von Hessen wurde am 19 Juli in Halle vor den Kaiser geführt, der auf einem Throne saß, umgeben von vielen deutschen, spanischen, und italienischen Groszen. Mit niedergeschlagenem Blicke kniete der Landgraf am Fusze des Thrones nieder und sein Kanzler Güntherode, hinter ihm knieend, las die Abbitte an den Kaiser ab. Sie war in sehr demüthigen Ausdrücken abgefaßt und ein Augenzeuge erzählt, es habe sich in der Verwirrung und Beschämung, die den Landgrafen in solcher Lage, vor solcher Versammlung, ergriff, auf seinem Gesichte ein Lächeln gezeigt, gleichsam als unbewusste Hülfe seiner Natur gegen das Gefühl der Schmach. Aber dem Kaiser entging seine Miene nicht; drohend hob er seinen Finger auf und sprach in seiner niederländischen Mundart, denn er redete das Deutsche schlecht:—"Wel, ich sal juw lachen lehren." Dann las des Kaisers Kanzler, Dr. Seld, die Antwort; "Obwohl der Landgraf wie er selbst bekenne, die schwerste Strafe verdient habe, so wolle dennoch der Kaiser, aus angeborener Milde und in Betracht der für ihn eingelegten Fürbitten, Gnade vor Recht ergehen lassen, ihn von der Acht erledigen und ihm das Leben, welches er verwirkt habe, schenken." Nach der Ablesung dieser Antwort wollte sich der Landgraf, als ein freier Fürst wieder erheben, und als der Kaiser ihm keinen Wink dazu gab, auch ihm den deutschen Handschlag der Versöhnung versagte, stand er von selber auf und trat ab.

SECTION II.—GRAMMAR AND IDIOMS.

(a.) Give the nominative singular with the definite article of the following plural substantives, and state the different meanings of the two forms of the plural:—*Bänder, Bande; Läden, Laden; Strausze, Sträusze; Wörter, Worte; Zolle, Zölle.*

(b.) Determine by rule the gender of—*Frühling, Silber, Schlüssel, Hoffnung, Herzogthum, Schlacht, Gabel, Mädchen, Stadthor.* Add to each the genitive singular and plural.

(c.) Decline in every case, singular and plural, the German of—"Dear brother; this good book: his new hat."

(d.) Conjugate the imperfect, perfect, and first future of *haben*, and *sein*, of *es friert mich*, and *es gebricht mir*.

(e.) State the imperfect, indicative, and subjunctive, and participle past of—*werfen, helfen, leiden, müssen*, and *wissen*.

(f.) Express in German:—1. He has written to me that he will come. 2. That he will come, he has written to me. 3. Should he come, he must wait. 4. He must wait should he come. Describe these clauses and their construction.

(g.) Das macht sich.

Das ist allerliebste.

Er hat sich schwer an ihr vergangen.

Er ist zuletzt ganz verkommen und verschollen.

Sie lebten in Saus und Braus.

Das steht ganz und gar bei Ihnen.

Er hat sich auf und davon gemacht.

Ach! warum nicht gar.

Er hat sich umgebracht.

Bekümmere dich doch nicht um ungelegte Eier.

Er zieht immer den kürzeren.

Das hält gar nicht Stich.

SECTION III.

[The writing, either in English or German characters, must be thoroughly legible and distinct.]

1. How many sorts of roses have you in your garden?

2. There are books which I never read.

3. At what o'clock do you go out in the morning?
4. All that I have I have given you.
5. He would sit for hours and read the newspapers.
6. Would that I had never seen him!
7. We had succeeded in overcoming the difficulties.
8. Do you remember them and their cousins?
9. One cannot always say what one will fail in.
10. Had I your knowledge, I would make good use of it.
11. Do you believe him to be honest and truthful?
12. Please tell me what day of the month it is to-day.
13. If I were to take it all, I should not have enough.
14. They were praised for what they had done.
15. An ambassador has been sent to Turkey.
16. Who has been helped in his work?
17. They went into a field, and laid themselves down on the grass.
18. He received five pounds a-week, and would not give two pounds and a-half to his poor old mother.
19. We got up at a quarter to six, and started punctually at a quarter past seven.
20. We know that time is short, but none of us know how short. We know that it will not go beyond a certain limit of years; but none of us know how small the number of years, or months, or days may be, for death is at work upon all ages. The fever of a few days may hurry the likeliest of us all from this land of mortality. The cold of a few weeks may settle into some lingering but irrecoverable disease. In one instant the blood of him who has the promise of many years may cease its circulation. Accident may assail us. A slight fall may precipitate us into eternity. An exposure to rain may lay us on the bed of our last sickness, from which we are never more to rise. A little spark may kindle the midnight conflagration, which lays a house and its inhabitants in ashes. A stroke of lightning may arrest the current of life in a twinkling. A thousand dangers beset us on the slippery path of this world.

SECTION IV.

Questions in German History and Literature.

- (a.) State some of the causes which led to the Reformation in Germany.
- (b.) Which are the dates of the Edicts of Worms and of Augsburg?
- (c.) What is the Confession of Augsburg, and by whom was it written?
- (d.) To which ancient epic poems can the "Nibelungenlied" and "Gudrun" be compared; and who are the principal personages in these German poems?
- (e.) Which poems belong to the cycle of the Lombardian sagas?
- (f.) What is characteristic in them?

GERMAN ESSAY.

Subject:—A visit to the Kensington Museum.

HARVESTING CORN IN WET WEATHER.

PRIZE ESSAY.*

By W. A. GIBBS, ESQ., OF GILLWELL-PARK, ESSEX.

There is no question of more importance to the well-being of a country than the preservation of its food. A well-saved harvest means well-paid rent to the landlord, prosperity to the farmer, grist to the mill, and bread for the hungry. It means also increased capital for the merchant and manufacturer, comfort and content for the workman, large powers of defence for the State, and less taxation for the whole community. It was, therefore, in the best interests of the whole community that the Council of the Society of Arts invited public attention to this subject, indicating a course of systematic inquiry, with a view to guide and stimulate invention in the right direction. It may seem strange that, in a climate proverbially fickle as ours, so few methods of precaution

have been adopted. The reason may be traced to the instinctive conviction in the minds of most practical men that it is utterly impossible to devise any adequate means of protection for so "spread" and bulky a thing as a great crop of corn. Let the most enthusiastic farmer plod through two or three twenty-acre fields of half-made hay or stooked corn on a wet evening, and he cannot but be struck by the impracticable bulk of the thing to be dealt with; he cannot but acknowledge that it is a kingdom with too wide a frontier ever to be guarded in its whole extent; and he will be apt to think that it is useless to attempt to protect it at all. A more common reason for this apparent apathy on a vital question is the pressure of business upon the owner of a large farm. The modern farmer, even though possessing all ordinary advantages, cannot be expected to adopt any improvement until it has been thoroughly tested and proved to be practical. Having to live by and upon his farm, and to superintend its daily duties, he has little leisure to make systematic and costly experiments, and not much inclination to investigate carefully the modes of husbandry practised in other countries; hence the advantage of bringing into prominent notice, from time to time, the results obtained by scientific investigation, and collecting in a concise form such hints and suggestions as may be derived from foreign customs. This, then, following the programme suggested by the Council of the Society of Arts, I now propose to do, as briefly and clearly as possible, pointing out, to the best of my ability, the reasons for and against each plan or custom as it comes under notice.

Of the expedients proposed or practised in our own country for partially averting the effect of unfavourable weather, the first and best is early reaping. It has been proved, by very accurate experiments, that wheat reaped "raw," say a fortnight before it is fully ripe, gave analytically, in weight and quality of produce, twenty per cent. advantage over that which was left till fully ripe; part of which advantage goes to the consumer, in the shape of better flour and more useful straw, and part rewards the grower by the higher market price absolutely realised; for, by further practical experiments, it was found that the produce of an acre cut early realised £14 18s., while that of a corresponding acre cut late only brought £13 11s. 8d., and this without any fluctuation of market prices to account for the difference.* Early cutting has also these recommendations—that the seed is not so likely to shake out; the straw is tougher for use as litter, and more succulent if required for food; but, above all, the two weeks of summer thus saved will give the crop a much better chance of drying. If, therefore, a farmer grew nothing but wheat, he might always take time by the forelock and secure these results; but if he has a hay harvest to finish before he can spare his men for the wheat-fields, and if, as it so often happens, this is delayed and belated by catching weather, it is not easy to see how he can avail himself of this primary and approved precaution. Until, therefore, he is in possession of some means which will give him the power of clearing his hay-fields (be the weather wet or dry) by a certain day, he cannot start fair, nor as his judgment would lead him to do, for his corn harvest. This power of dealing with the first important crop of the season by a given time, is the starting-point of systematic husbandry; and in the course of this essay I hope to be able to show that such a power is ready to his hands if he will but use it.

Several ingenious proposals for protecting or drying corn have been recommended by enterprising experimentalists, who have recorded from time to time their methods and results. In those districts of Kent and Sussex where hop oasts, or kilns, are near enough to the wheat fields to render the carting to and fro practicable, wet wheat in the straw has been dried in these buildings with tolerable success. One trial of this plan showed

* For this essay the Society's Gold Medal and a prize of fifty guineas were awarded.

* See Stephens' "Book of the Farm," vol. ii., p. 352; and "Quarterly Journal of Agriculture," vol. xii., pp. 22 and 23.

that on a kiln floor, the area of which was 540 superficial feet (less than eight yards square), the produce of 9½ acres could be dried in six days, the average time required for each charge of sheaves being twenty-four hours. In bad weather it is surely better to save part of a crop than to lose all, but an acre and a-half cleared in twenty-four hours would be rather slow harvesting for a large farm; besides, this plan, however successful, must always be merely local, and confined to the four or five hop-growing counties in the kingdom. A gentleman in Sussex, many years ago, had 30 acres of wheat cut and placed under cover, using for that purpose every barn, hovel, cattle or implement shed on his farm, and setting the sheaves upright and closely packed together on the ground; each acre of sheaves occupying thus 400 superficial feet. This wheat was cut whilst the weather was dry, and carried dry to its shelter, and he found that in ten or twelve days it was ready to be threshed out. Afterwards, as an experiment, two waggon-loads of wheat, that had been cut and carried during heavy rain, were also brought in, and placed under shelter in the same manner, and these were reported dry enough for threshing in sixteen days. If these results have been verified by subsequent experience, they would seem to indicate a valuable and partially available means of saving at least some portion of a crop. Possibly the chief reason why this method has not been extensively adopted may be found in the fact that the large area of roofed-in space requisite for the purpose is not often to be found on a farm. To accommodate even 30 acres, each acre of which needs 400 feet of standing room, a farmer must possess, and be able to clear out, twelve thousand superficial feet of shelter, that is, equal to 30 sheds measuring 27 feet by 15 feet each.

The simpler and more usual modes of protection are chiefly used in the North and in Scotland, and comprise various ways, more or less skilful, of forming the sheaves in the field into large stooks, and capping or hooding them with one or two other sheaves, either inverted or laid transversely over the rest. Sometimes the old custom of "wind-mowing" is revived; this consists in building up the sheaves into small temporary stacks, of a conical shape, about ten or twelve feet in diameter at the bottom, and carried up to a point at eight or ten feet high. The base of the cone is formed by a circle of sheaves, with their heads laid together, so as to form a mutual support, and to preserve a hollow central air-space, whilst the butts are spread slopingly outward, to sustain the superstructure that is to be raised upon them; the next course is then adjusted over these, in such a manner as to protect the heads of the first, and so on to the top, the butts of every course, as it is built up, resting on the bands of the course below it. The structure is sharply tapered as it is raised, and finally capped with one large sheaf, tightly banded close to its butt, and inverted over the top course, so as to form a high-peaked roof. There is much diversity of opinion and practice as to these customs, and also as to the best size for a sheaf, and the best form for a stook. Of course a small sheaf with a single band will dry more quickly than a large one with two, but then it will also be more easily penetrated by rain, and the same must be said with regard to large and small stooks, and the question of hoods or no hoods; it is impossible to lay down any fixed rule; the choice between one and the other must be always left to the judgment of the farmer himself, and the forecast he may have formed as to the probable weather. Any size or form of sheaves having for its object the keeping moisture out, has also the inconvenient result of keeping it in, and so retarding the harvesting; and it is clear that whatever arrangement lets the natural moisture escape most easily, also lets in heavy rains with equal facility; if, therefore, the glass should be sinking, and the clouds gathering, and the bailiff take a gloomy view of the weather, large stooks, carefully hooded, will be probably decided on; but if influences, both indoors and out, are sunny

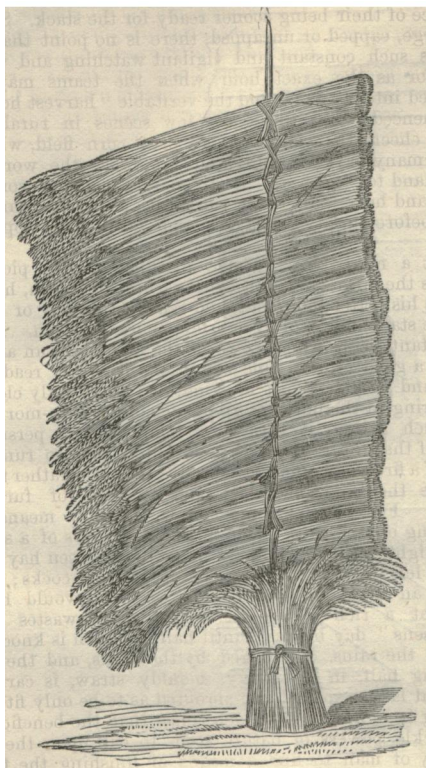
and hopeful, then small sheaves will be risked, for the chance of their being sooner ready for the stack. Small or large, capped or uncapped, there is no point that requires such constant and vigilant watching and waiting for as the exact hour when the teams may be ordered into the field, and the veritable "harvest home" commenced; and there are few scenes in rural life more cheery than either a hay or a corn field, where, after many days of doubt and hindrance, the word of command to "cart up" is given, and men and women, boys and horses, all set to work with a will to clear the field before night brings dew and darkness to stop the work.

But a mortifying reverse to this cheerful picture awaits the farmer who, in his eagerness to get on, hoodwinks his better judgment, and sends either hay or corn to the stack a day, or even a few hours, too soon. It is very tantalising when, towards the middle of an afternoon, a good crop in fine condition, is *almost* ready to cart, and a sudden shift of wind, and some ugly clouds gathering in the horizon, give omen of a wet to-morrow. At such a time it is a sore temptation to persuade oneself that the "almost" is "quite," and so run the risk of a fired hay-stack or mouldy corn-rick, rather than endure the hindrance, loss, and vexation of further delay. For lack of some simple and easy means of carrying on the work through the cool hours of a summer night, many a fair field of fragrant green hay has to be left for days and weeks spoiling in cocks; and many an acre of golden sheaves, that would have brought a rich return to the grower, wastes and "worsens" day by day, until half the corn is knocked out by the rains, or pillaged by the birds, and the remaining half, in its dingy, mouldy straw, is carried home at last so spoiled and sprouted as to be only fit for the pig trough. It is at such times that the beneficent but fickle powers of nature seem to call upon the ingenuity of man to find a means of finishing the task which they themselves have nearly completed, and urge him to seek the aid of science, by whose help so many natural difficulties have already been removed. Let us, therefore, inquire what has been done in mitigation of these losses, in countries where a still more rigorous necessity has had its usual effect of giving a stronger stimulus to invention.

Foremost in the rank stands the kingdom of Sweden. She has availed herself of her abundant supplies of wood to form, out of the thinnings of the forest, several ingenious arrangements for partially securing her cereals from the inclemency of the climate. One is, the staking into the ground at intervals in the fields, fir poles six or seven feet high; on the sharpened points of these poles the sheaves are spiked, and slid down one over another, in the manner shown in the drawing, Fig. 1 (p. 783), so that the top sheaf forms a species of protection to all those below it. It is said that one man (following the reaper) can set up five hundred of such poles in a day, and that, by practice, the sheaves can be spiked upon these stakes as readily as they could be set up in stooks. I should rather question both these assertions; and there is a striking inaccuracy in "Stephens' Book of the Farm," as to the number of sheaves each pole is supposed to hold; the diameter of an ordinary sheaf is over one foot, hence, allowing two feet for the bottom one, placed, as it is, upright, there would obviously be only room on a seven-foot pole for five more sheaves, or six in all, whereas the numbers shown in the drawing would leave the unwary to suppose that each pole would hold 15 sheaves, and some spike room to spare!* The second arrangement (Fig. 2, p. 784), is a species of rack, on a strong stand, with a roughly-boarded aris roof; this is said to be much used in Russia also. The third plan consists merely of a series of tall and long wooden

* This error has been repeated in a recent letter to the *Agricultural Gazette*, which gives 8 feet for the length of pole, and 16 or 18 as the number of sheaves.

Fig. 1.



hurdles, over the rails of which the sheaves are placed astride with the ears downward. The fourth, and probably the best, is Fig. 3 (p. 784), where the tops of the sheaves are turned in, and hooked on, as it were, to each rail of the skeleton roof; each layer of sheaves thus forming some protection both for the grain and part of the straw of the layer immediately below. Of course all these devices would be much more costly in most parts of Great Britain than in Sweden or Russia, from the greater scarcity of wood and the higher value of labour.

These few and meagre expedients exhaust, I believe, the whole category of invention, so far as mere protection is concerned; effort in that direction is apparently dwarfed and defied by the portentous bulk of the thing to be dealt with. The large expenditure of money and labour requisite to give even the roughest and most imperfect shelter to fields full of hay or corn, must always, I fear, operate against the success of such attempts. If, therefore, prevention does not seem hopeful, let us next consider what has been done or proposed, both here and abroad, in the way of cure.

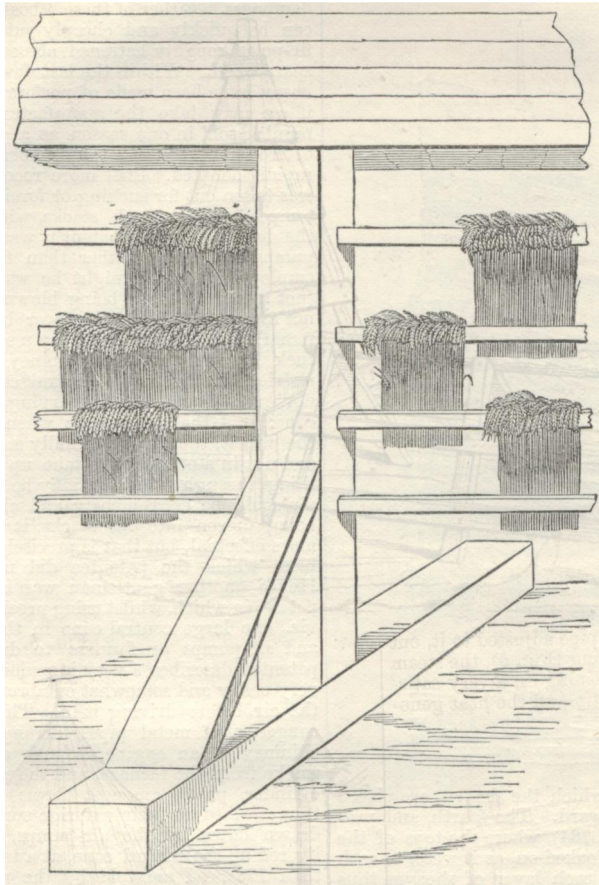
If we must so frequently have the unpleasant alternative of heavy loss by waste and delay in the field, or mildew and spoliation in the stack, can we do anything with it in the stack to lessen the difficulty? To some extent this has been accomplished. Small stacks, built along the headland of the fields, will economise time, and enable the teams to clear a greater breadth of land than if they had to carry to a distant homestead; but such a system, besides the after-confusion and additional labour which it brings with it, involves considerably more cost for thatching.

When the stacks, either in field or rick-yard, are raised from the ground on pillars, so as to leave an air-space below, a hollow wooden prism (Fig. 5, p. 785), built in the centre is a very useful and long-practised custom. If built without the lower air-space, a conical triangle and a side tressel (as in Fig. 4, p. 785) will best give access of air to

the centre, and thus counteract some of the ill-effects of dampness. Either of these "bosses," as they are called, can be quickly and cheaply put together out of small fir-poles, roughly battened across with short lengths of spare wood. Within the last few years hollow conical bosses have been made of perforated wrought-iron; and if we may take the manufacturers' statement of the number sold in one season as a guide, this substitution of iron for wood must have been widely approved and rapidly adopted. Still more recently, in 1866, a patent was taken out for sucking or forcing air, at the ordinary temperature, through stacks, with a view to expedite the drying. In this patent it was suggested that if air-pumps and force, rather than fans or suction, were employed, such air might be warmed in some manner (not specified) before being blown into the stack. I am not aware if this plan has ever been tried, but I would remark that either to blow, by means of an air-pump, or suck by the aid of a chimney stalk, *unwarmed* and *undried* air through a central cone in the stack could not greatly expedite the drying, especially when it is considered that in seasons when dampness prevails in the wheat, the air is generally saturated with moisture, and not in a condition to take up more water from anything through which it may be made to pass. If the air could be conveniently and cheaply warmed before being driven into the stacks, it would undoubtedly be more effectual, but that is precisely the part of the problem which the patentee did not attempt to solve. Hence another gentleman was induced to take out a patent, in which, whilst using precisely the same method, viz., one large central cone in the middle of the stack, and air-pumps or fanners to drive air into it, the patentee describes a very ingenious, but I should fear a very costly and somewhat cumbrous method of warming the air before driving it in. This mode consists of a congeries of metal pipes, arranged in or above the chimney of an engine, in such a manner as that the smoke from the furnace, and the waste steam from the cylinder, passes amongst them; through these pipes, thus warmed on their exterior surfaces, the outer air is drawn down by the air-pumps, and ultimately delivered up the central cone, at a temperature not higher than 120°. I am told by the patentee that he has personally tried this method upon a stack of damp wheat, and found it effective, but he is not intending (I believe) to put his patent into operation, because the two processes being precisely alike, up to the point of warming the air, the first patentee claims priority.

I should apprehend that in attempting to dry wheat in the stack by this method of one large central pipe, the air from a *fan* would not have pressure enough to overcome the obstruction of the thick mass of sheaves packed around the cone, and that, even if it did, or if pressure were obtained by the costly substitution of air-pumps, such compressed air would have a tendency to pass out of the stack very unequally, and wherever it could find the freest exit. It would form vents for itself in a few places where the grain and the straw were the driest, and where, consequently, the sheaves lay lightest; and through these more porous parts the greater volume of the air would pass, with an ever-increasing ease of outlet, *over-drying* in its passage that which was already dry, and leaving the damper and denser portions very much as they were at first; this would be especially the case when the moisture had penetrated to the centres of the sheaves before stacking; these centres, being firmly compressed by the sheaf-bands, offer a very strong resistance to the passage of air through them, so much so, that when some sheaves were close packed, upright on a kiln floor, and hot air driven through them by means of a powerful fan, the exterior of each sheaf was dried to brittleness in half an hour, but the centres at the band were as moist as ever after an hour and a-half of such exposure. It is further to be noted that this mode of stack-drying could not deal with the crop at all if absolutely *wet* instead of merely damp; and would certainly

FIG. 2.



be inoperative with wet or even damp hay, which last clamps itself down by its own pressure into so compact a mass in the stack, as to stifle and check back completely any ordinary force of air that may be attempted to be driven through it from the centre outwards. I think this will be self-evident to any practical man who will take the trouble to examine the "close" condition of a damp hay-cock after being left for only a day and a night without shaking out; it presents a succession of thick, heavy tangled mats, which would effectually cling round and gag the air-holes of a central stack tube, un-

less an enormous force were used, and if such force were resorted to, it would, most probably, expend itself by driving a few channels here and there through the driest parts of the stack.

There has been one other mode of ventilation recently proposed and partially adopted. This consists of a pipe let into the side of the stack in such a manner as that the one end shall reach to the centre, and the other project a few feet beyond the exterior; the central end is pointed, and perforated for two or three feet of its length, and the outer projecting end of this horizontal pipe has

FIG. 3.

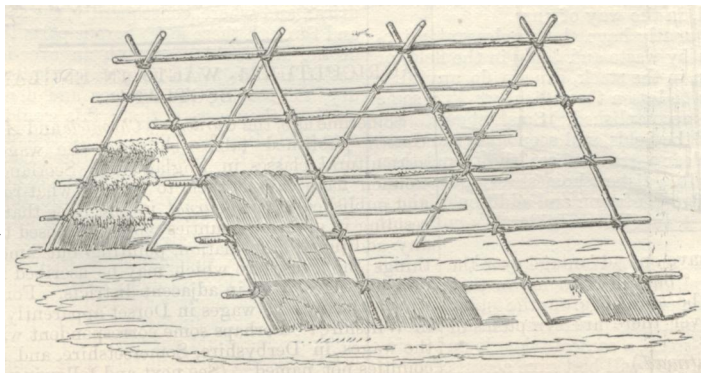
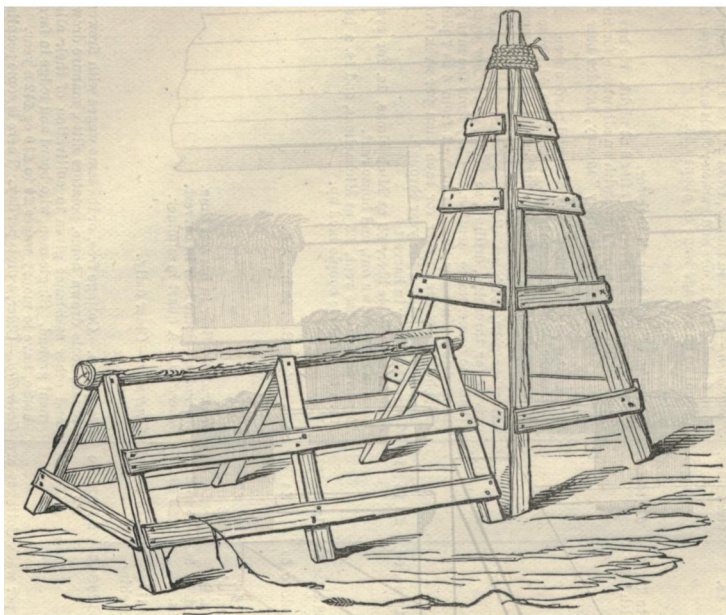
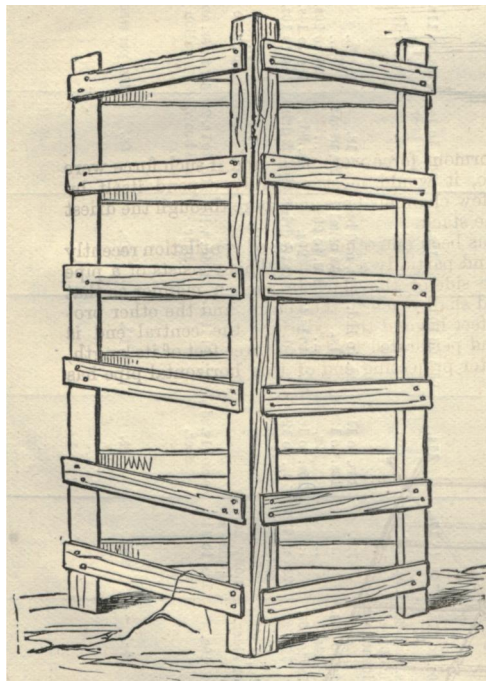


FIG. 4.



an elbow and a length of upright pipe adjusted to it, out of the top of which, in the drawing (Fig. 6), the steam from the stack is represented as issuing in a very satisfactory manner. This mode of letting off the heat gene-

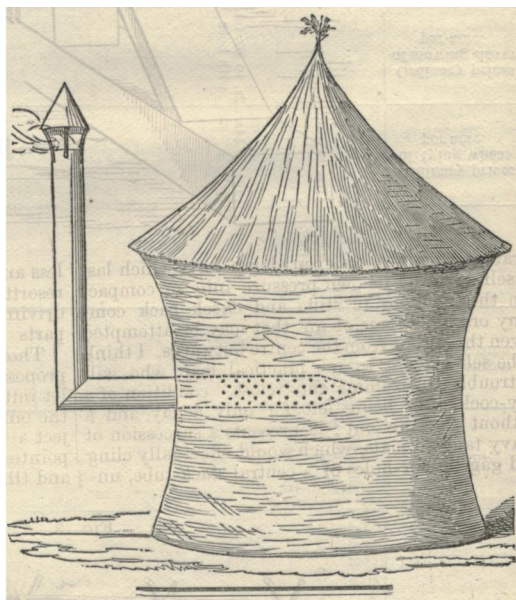
FIG. 5.



rated by fermentation may have one advantage over the old time-honoured plan of "building in" a vertical chimney, inasmuch as it can be applied after the stack is partially built, and whenever there are symptoms of an excess of heat.

(To be continued.)

FIG. 6.



AGRICULTURAL WAGES IN ENGLAND AND SCOTLAND.

Sometime ago, the *Gardener's Chronicle* and *Agricultural Gazette* published tables showing the wages of the agricultural classes in England and Scotland, and the Council have caused them to be somewhat re-arranged and published in the *Journal*, in the hope that members residing in different counties will be disposed to forward any additional information, pointing out among other things the causes to which may be ascribed the variation of wages, even in adjacent districts. For instance, why is the rate of wages in Dorset apparently less than in Wiltshire? Perhaps some correspondent will supply the wages in Derbyshire, Somersetshire, and any other counties not named. (See next and following pages.)

AGRICULTURAL WAGES, 1868.

	Able-bodied Ploughmen.	Shepherds.	Day-labourers.	Women.	In harvest time.	Ordinary prices of tyn wheat of per acre.	Ordinary prices of mowing clover of per acre.	Ordinary prices of mowing meadow grass of per acre.	Rent of Cottage weekly or yearly.	Perquisites.
Aberdeen	£22 to £24 with victuals yearly.	£20 to £22 with victuals. The same as ploughmen, with sometimes cow-keep.	13s. to 16s. 2s. to 2s. 6d.	£3 to £13 with victuals 11d.	£3 to £4 with victuals 1s. and board	... 10s. to 12s.	... 4s.	... 4s.	£2 50s. to 60s.	<i>Generally</i> .—Beer in harvest. <i>Ploughmen</i> .—Wages in money, from £18 to £22; oatmeal, 5 to 6 loads; free house and garden; coals carted free, &c. Equal to an average wage of about £36.
Ayr	14s.	14s.	2s.	...	...	10s. to 14s.	2s. to 3s. 6d. with beer	2s. to 3s. 6d. with beer	£2 to £3	<i>Generally</i> .—Small beer all the year. <i>Ploughmen</i> .—Paid for overtime after 6 at night. He has the same in harvest as other men, with an allowance for Sundays. He has also "journey" money, besides beer for drilling. <i>Shepherds</i> .—In some instances, house and garden free. An allowance is made for each lamb, generally 2s. 6d. per score. The shearing is done by the shepherd at 1s. per score, besides day's pay. He also receives the same in harvest as other men, with an allowance for Sundays. All is given for threshing, drilling, shearing, and other operations too numerous to mention. In hay time the men get from 4 to 5 pints per day; in harvest from 4 to 7 pints. The beer costs the farmer for each man per week from 1s. 6d. to 2s., taking the year through.
Bedford	12s.	12s.	11s. to 12s.	9d.	1s. to 1s. 2d.	11s. to 12s.	3s. 6d.	4s. to 4s. 6d.	£2 to £3	<i>Generally</i> .—Beer in harvest. <i>Ploughmen</i> .—Table beer, £3 at Michaelmas, 1s. for every load of corn drawn out, and house rent. <i>Shepherds</i> .—House rent, £3 at Michaelmas, and 1s. a head for every double couple bred up.
Berks	10s. to 17s.	12s. to 17s.	11s.	8d. and 10d.	10d. to 1s. and beer	10s. to 11s.	2s. 6d.	3s. 6d. to 4s. 6d.	1s. to 2s.	<i>Generally</i> .—Beer in harvest.
"	14s. and 30s. at 40s. at Michaelmas.	14s. and 40s.	13s.	10d.	1s.	10s. to 16s.	4s. to 4s. 6d.	4s. 6d. to 5s.	£4	
Bucks	12s.	12s.	10s. to 11s.	8d. to 10d.	1s.	...	2s. 6d.	4s.	£3	
Caermarthen	12s. to 15s.	...	12s. to 13s.	1s.	As usual	...	3s.	3s. 6d.	£3 to £4	
Cheshire	14s.	...	12s.	...	...	15s. to 20s.	3s.	3s. 6d.	£4	<i>Generally</i> .—Beer in harvest time.
"	15s. to 16s.	...	15s. to 18s.	1s. 2d. to 1s. 4d.	1s. 6d.	10s. to 14s.	3s. 6d. to 4s.	4s. 6d. to 5s.	£5 to £10	<i>Generally</i> .—Some beer in harvest.
Cornwall	12s.	12s., and £3 per year.	10s. to 12s., wheat at 7s.	9d.	Meat & drink	8s. to 10s.	2s. 6d.	3s. 6d.	£3 10s.	<i>Generally</i> .—A quart in summer.
Devon	12s., 3 pints of cider.	15s. and many perquisites.	12s.	...	...	All by machine	All by machine	All by machine	1s. to 1s. 6d.	<i>Generally</i> .—Cider daily.
"	10s.	12s. to 14s.	2s. and 1s. 8d., beer.	8d. to 10d.	10d. to 1s. 2d. and board	8s. to 8s. and 1 gallon	2s. 3d. to 2s. 6d.	3s. 3d. to 3s. 6d.	£2 12s. to £3 5s.	<i>Ploughmen</i> .—Cottage free, or the same wages with firewood found, coals drawn home, potatoes ditto, manure drawn, and other assistance given in cultivation of their allotment ground. Single men, who board and lodge in farm-house, have in money wages £8 to £10 or £12 a year.
Dorset	9s.	9s.	8s.	4s. 6d.	6s.	15s. per week	15s. per week	15s. per week	Cottages are free	<i>Generally</i> .—Cider, 4 pints per day. There is some peculiarity in the amount of wages paid in this locality; the regular labourers on the farm have their cottages and gardens free, and wheat (either in proportion to their families or the number of workers) at 5s. per bushel. The shepherds and carters have in addition potato land, also free. Changes are seldom made—men working for one master or on one farm all their lives. Cottage accommodation indifferent, education not first-rate.

AGRICULTURAL WAGES, 1868.—Continued.

	Able-bodied Ploughmen.	Shepherds.	Day-labourers.	Women.	Day-labourers in harvest time.	Women in harvest time.	Ordinary prices of tilling wheat per acre.	Ordinary prices of mowing clover per acre.	Ordinary prices of mowing meadow grass per acre.	Rent of Cottage or yearly.	Perquisites.
Essex	14s.	14s., with cottage and £5 16s.	15s.	8s.	£7	...	10s. to 15s.	5s. to 6s.	5s.	2s. to 3s.	Ploughmen.—Have generally cottage and £7 for the harvest month. Shepherds.—4s. a week for beer during six weeks' lambing time; 20s. per 100 lambs. No harvest wages. Generally.—Small beer.
"	14s. 6d.	12s. to 13s.	13s.	9d.	£7 4s. per month £4 to £5	24s.	10s.	4s.	4s. 8d.	£4 4s.	
"	11s.	10s. to 11s.	10s. to 11s.	...	...	...	7s. 6d. to 12s.	2s. 9d. to 3s. 6d.	2s. 9d. to 3s. 6d.	55s. to 70s.	Generally.—20s., with one or two pints of ale per day in lambing season; 1s. per head for all lambs reared more than number of ewes set, and paid by the score for shearing. Calculated at 4s. per £1.
File	16s.	16s.	2s. 2d.	1s.	£5 to £6	2s. 6d.	10s. to 20s.	2s. 6d. to 5s.	4s. to 8s.	2s. to 3s.	
"	14s.	14s.	13s.	1s.	3s.	2s. 3d.	...	...	...	£2 2s.	
Gloucester	16s.	18s.	10s. and beer	8s. to 10s.	...	with victuals	10s. to 12s.	2s. 6d. to 5s.	...	...	Ploughmen and Shepherds.—Have besides house rent and sundry perquisites.
"	13s., house and garden	12s., and £3 a year	12s.	5s.	15s.	6s. 6d.	10s. to 12s.	2s. 4d. to 3s. 2d.	3s. 2d. to 4s.	1s. to 2s.	Generally.—Beer in harvest.
"	13s. to 14s.	14s. to 18s.	11s.	8d.	12s. to 14s.	10d. to 1s.	10s. to 14s.	2s. 6d. to 3s. 6d.	2s. 6d. to 3s.	1s.	Generally.—Beer in summer.
"	10s. to 12s.	12s.	10s. to 11s.	10d.	...	...	4s. 6d. to 5s.	2s. 6d.	3s. 6d. to 4s.	£2 to £4	Shepherds.—£1 for lambing, 6d. for every double couple, 2s. 6d. per score for clipping sheep, 6d. per score for all sheep taken to market, and cottage.
Hants	12s.	14s.	12s.	5s.	Man & wife	Man & wife	10s. to 12s.	3s.	3s. 6d. to 4s.	2s.	Generally.—Beer in harvest.
Hants (North)	12s., and £2 to £5 10s.	12s., and £2 to £6 11s.	12s.	9d.	3s.	...	10s. to 12s.	3s. 6d. to 4s. 6d.	4s. to 5s.	£2 10s. to £3 10s.	
Hereford	10s.	11s.	10s.	9d.	2s. 6d. to 3s. 6d.	1s. with cider and food on carting days	All by machine	All by machine	All by machine	50s. to £5	Ploughmen.—£1 per year, 2s. 6d. per week in cider 5-roomed cottage, with large garden rent free, and allotment of potato ground in the field. Shepherds.—£2 per year, cider, cottage, and other perquisites like ploughmen.
Huntingdon	14s.	14s.	12s.	9d.	25s.	9s.	8s. 6d. to 10s.	2s. 6d. to 3s. 3s. 6d.	4s. 6d.	50s. to £4 10s.	Generally.—Coals hauled from pit.
Kent	16s.	15s., & extra for lambing	15s.	...	Double	Double	12s. to 18s.	4s. 6d. to 5s. 6d.	4s. to 6d.	Free to ploughmen	Ploughmen.—£1 per year, 2s. 6d. per week in cider 5-roomed cottage, with large garden rent free, and allotment of potato ground in the field.
Lancashire	16s. 6d. to 18s.	18s. to 21s.	16s. 6d. to 18s.	9s.	18s.	12s.	6s. with machine	6s. with machine	...	1s. to 1s. 3d.	Shepherds.—£2 per year, cider, cottage, and other perquisites like ploughmen.
Lincoln	9s. weekly board wages	12s. to 14s.	13s. 6d. to 15s.	1s. to 1s. 2d.	...	...	14s. to 16s.	3s. to 4s.	...	2s. to 2s. 6d.	Ploughmen.—Our ploughmen are mostly single men, hired by the year, wages £12 to £14, with board and lodgings. Generally.—Beer in harvest.
"	15s.	£48 per year	15s.	1s.	20s.	...	10s. to 12s.	2s. 6d.	2s. to 3s. 6d.	£4 to £5	Shepherds.—Beer in harvest, or £1 instead; keeps a pig, if not, is allowed 15 to 20 stones of pork; has beer or money for delivering corn, hay-carting, &c.; pays rent for house and garden. Under-horse-keepers and ploughboys 11s. to 14s. per week; beer or money.
"	£10 to £15 and board	18s. to 19s.	2s. 6d.	1s.	£5	15s.	10s.	3s. 6d.	3s. 6d. to 5s.	£4 to £5	Generally.—Beer in harvest.
Lincoln (North) ..	12s.	13s.	13s.	6s. 6d.	21s.	...	10s. to 18s.	2s. 6d. to 3s. 6d.	2s. 6d. to 3s.	£4 to £5	Generally.—Less beer given than formerly.
Lincoln (South) ..	16s.	16s.	2s. 6d.	1s. 3d.	Doubled	Doubled	10s. to 18s.	3s. to 3s. 6d.	4s. to 5s.	£3 to £5	Ploughmen.—Cottage and garden free, worth to let 2s. 6d. per week; from £3 to £3 10s. extra pay for harvest, or its equivalent in fresh pork; 9 to 12 bushels of potatoes, or land prepared to plant.
Middlesex	15s.	£48 per year	15s.	1s.	20s.	...	10s. to 12s.	2s. 6d.	2s. to 3s. 6d.	£4 to £5	Generally.—£1 in harvest and beer.
Norfolk	14s. 6d.	16s.	13s. to 18s.	6s.	Over hours	Over hours	14s. to 20s.	5s. to 7s. 6d.	5s. to 7s.	£6 to £8	Ploughmen.—Harvest money and cottage rent free.
Northumberland ..	17s.	15s.	2s. to 2s. 3d.	9d. to 1s.	£8 10s.	7s. 6d.	8s. to 14s.	2s. 6d. to 3s. 6d.	3s. 6d. to 5s.	£3 10s.	Generally.—Hauling of 4 tons of coals.
"	15s.	18s. to 25s.	14s.	1s.	17s. 9d.	2s. to 3s.	17s. to 18s.	4s. 6d.	All by machine	1s. to 2s. 6d.	Generally.—Beer at harvest (carting).
"	15s.	15s.	15s. and 16s.	1s.	4s.	...	All by machine	All by machine	All by machine	Rent free	Ploughmen.—House rent free, and 400 yards of potatoes, and coals carted.

AGRICULTURAL WAGES, 1868.—Continued.

	Able-bodied Ploughmen.	Shepherds.	Day-labourers.	Women.	Day-labourers in harvest time.	Women in harvest time.	Ordinary prices of tyning wheat per acre.	Ordinary prices of mowing clover per acre.	Ordinary prices of mowing meadow grass per acre.	Rent of Cottage or yearly.	Perquisites.
Northumberland	16s. to 18s.	12s. 6d.	2s. 9d. to 3s. 6d.	1s.	24s. to 28s.	12s. to 15s.	10s. to 15s.	3s. to 5s.	3s. to 6s.	£2 to £5	<i>Ploughmen</i> .—From 4 to 12 bushels of wheat, a few bushels of barley, 60 to 100 stones of potatoes, and free house. Some labourers have 16s. per week, 6 bushels of wheat, 4 bushels of barley, 80 stones of potatoes, land to plant 10 stones of potatoes (about 1-10th of acre), with free house, garden, and coals carted. <i>Shepherds</i> .—Perquisites as ploughman, and 6 ewes and 4 hogs kept. <i>Generally</i> .—Beer.
Nottingham	£20 with rations	15s. to 20s.	15s.	1s.	5 weeks rations	...	5s. to 12s.	2s. 6d. to 3s. 6d.	3s. to 4s.	£2 to £4	<i>Generally</i> .—Beer or malt allowed in harvest.
Oxford	12s. to 14s. with cottage	12s. to 15s.	12s. to 14s.	4s. 6d. to 5s. 6d.	...	...	9s. to 10s.	2s. 6d. to 3s. 6d.	3s. 6d. to 4s. 6d.	£2 10s. to £4 10s.	No beer.
"	14s. to 15s.	16s. to 17s.	11s. and 12s. piecwork	8d. to 1s.	3s. 4d.	1s. 6d.	10s.	3s.	4s.	1s. 6d.	<i>Shepherds</i> .—£1 for the lambing season, £2 for shearing sheep, and harvest.
"	13s.	13s.	11s.	1s.	18s.	...	11s. to 15s.	3s.	3s. 6d.	1s.	<i>Generally</i> .—In harvest half-quartern loaf and 2 bottles beer.
Perth	£18 to £20	...	13s. to 16s.	1s.	20s. to 25s.	2s. 6d. to 2s. 9d.	10s. to 12s.	3s. to 4s.	...	£2 to £3	<i>Ploughmen</i> .—With 6½ bolls (of 140 lb.) oatmeal, and 1 ton of potatoes; 3 to 4 imperial pints milk a-day; cottage and garden free. Unmarried men, money and meal same; coals and house provided.
Stirling	£22 to £28 and board	£18 to £25	2s. 6d. to 3s. 1s. 3d. to 1s. 6d.	1s.	4s. 6d. to 5s.	2s. 2s. to 2s. 6d.	12s. to 16s.	3s. to 3s. 6d.	4s. to 4s. 6d.	£2 to £4	<i>Shepherds</i> .—Head married ploughmen, 6½ bolls meal, 4 bolls potatoes, ½ gallon sweet milk daily, free house and garden, coals carted. Single ploughmen lodge and get their meat in the house.
Suffolk	13s.	16s. to 20s.	12s.	4s.	Double pay	Double pay	...	2s. 9d. to 3s. 6d.	2s. 9d. to 3s. 6d.	£3 to £4	<i>Shepherds</i> .—Head shepherds have house and garden, cow-keep, and 6½ bolls meal. Young shepherds get their bed and board in the house.
"	12s.	13s. to 15s.	...	...	£7	...	...	...	...	£2 10s. to £4 10s.	<i>Generally</i> .—Beer in harvest.
"	£42	£55	£37 8s. 10d.	...	£7 2s. 6d.	...	8s. to 14s.	3s. to 4s. 6d.	3s. to 5s.	£2 10s.	<i>Generally</i> .—2 to 3 pints in harvest.
Surrey	15s.	15s. to 17s.	13s.	6s.	3s. and over hours	...	10s. to 12s.	3s. to 4s.	4s. to 5s.	2s. to 2s. 6d.	<i>Generally</i> .—6 to 7 or 8 pints of beer in harvest time.
"	13s.	14s. with free house	2s. 6d. to 3s.	1s. to 1s. 4d.	3s. 6d. to 4s.	1s. 6d. to 2s.	10s. to 15s.	4s. to 5s.	6s. to 7s.	Rent free	<i>Ploughmen</i> .—With free cottage and garden, valued at 2s. 3s. per week. Wet time paid for, and in case of a month's sickness no deduction made.
Sussex	14s. 6d. to 16s.	15s. to 18s.	13s.	...	2s. 6d. to 3s. 6d.	1s. 6d.	11s. to 15s.	3s. 3d.	3s. 9d. to 4s. 6d.	1s. 6d.	<i>Generally</i> .—Much piece-work. Beer in harvest.
"	14s. to 15s.	15s. to 18s.	13s. to 14s.	...	21s.	...	12s. to 15s.	3s. 6d.	4s. 6d. to 5s.	2s.	<i>Ploughmen</i> .—Have 20s. to 30s. in harvest.
Sussex (West)	15s.	15s.	2s.	8d.	3s. 6d. and 3 quarts	...	10s. to 15s.	4s. and 2 quarts.	3s. 6d. and 2 quarts	1s. to 2s. 6d.	<i>Generally</i> .—Beer in harvest.
Warwick	13s.	12s.	11s. and 12s.	8d.	Doubled	Doubled	10s. to 15s.	2s. 6d.	3s.	50s. to £3	<i>Ploughmen</i> .—120 to 130 imperial stones of oatmeal, 4 tons of coals, 2 to 3 bushels of potatoes planted on master's manure; all the manure they make planted with potatoes; house and garden; per annum.
"	14s.	14s.	13s.	9d. to 1s.	18s. to 22s.	...	10s. to 16s.	3s. to 3s. 6d.	4s.	£2 to £3	<i>Shepherds</i> .—About the same.
Wigton	£13 to £15 the same perquisites as ploughmen	14s.	2s.	...	£2 with victuals	...	10s.	3s.	...	...	<i>Generally</i> .—Beer.
Wiltshire	12s. and many perquisites	10s.	12s. to 20s.	8d.	12s. to 20s.	...	10s. to 12s.	2s. 6d. to 3s.	3s. to 3s. 6d.	30s. to 50s.	

AGRICULTURAL WAGES, 1868.—Continued.

	Ploughmen.	Shepherds.	Day-labourers.	Women.	Day-labourers in harvest time.	Women in harvest time.	Ordinary prices of tilling wheat per acre.	Ordinary prices of mowing clover per acre.	Ordinary prices of mowing meadow grass per acre.	Rent of Cottage weekly or yearly.	Perquisites.
Wills	12s.	£36 to £39	10s. to 11s.	8d. to 1s.	2s. 6d. and drink	1s.	9s. to 12s.	2s. to 3s.	2s. 6d. to 3s. 6d.	9s. to 1s. 6d.	Ploughmen.—Extras, 40s. for harvest, 1s. per load for delivering the corn to the miller, &c., and cartage of fagots and manure, making a total of £38 to £39 per year, besides drink. Generally.—Small beer daily.
"	11s.	11s. and £5	10s.	4s.	2s.	1s.	10s. to 14s.	2s. 3d. to 2s. 6d.	3s. to 4s.	£2 10s. to £3 3s.	Ploughmen.—With £3 for harvest, house and garden rent free, and 1s. or 1s. 6d. when out with corn. Under-men, 6s. to 9s. per week, and £1 at Michaelmas. Generally.—Beer often.
Worcester	13s. to 14s.	14s.	11s.	4s. 6d.	15s. to 18s.	6s.	10s. to 15s.	3s. to 3s. 6d.	3s. to 3s. 6d.	£4	Generally.—2 quarts in winter and 3 in summer.
York	12s. to 15s.	15s.	12s. to 14s.	5s. to 6s.	Doubled £2 extra	Doubled, 1s. 6d.	10s. to 15s.	Machine cut, 2s. 6d. to 3s. 6d.	1s. to 1s. 6d.	£3 to £3 6s.	Generally.—Beer. Bread and cheese and ale for over-hours generally.
"	14s. and overwork paid.	15s.	14s.	5s.	£2 extra	1s. 6d.	All by machine	All by machine	All by machine	£3 10s. to £4	Shepherds.—Cottage and garden rent free, a ton of coals, and 18 gallons of ale in the lambing season, and £2 extra wages in harvest, besides other small perquisites. Generally.—Ale in harvest.
"	£8 to £18 with lodgings and rations	13s. 6d.	12s. to 13s.	9d.	21s. and rations	...	...	4s.	4s.	£3 10s. to £4	

Manufactures.

NEW WATCH.—Dr. Sacc, of Neuchâtel, Switzerland, writes to *Les Mondes*, that he will send, from M. Robert Theuner, one of the best manufacturers of watches in that district, a watch invented by him. This watch has two wheels less than those usually made. It is keyless, being wound up by turning a button, from left to right, and *vice-versa*. On turning another button, placed at the left of the watch, the winding apparatus ceases to act in that direction, and sets the hands backwards or forwards, as may be required. The watch is in a silver case, with a face marked for hours, and also with a separate seconds hand; they can be sold for 25 francs each (£1 sterling); they are excellent. They are patented in France, England, and the United States. They are manufactured in thousands, and are suited for people of moderate means. M. Theuner is described as a man of great inventive genius, always in advance, and ever endeavouring to improve the art of watchmaking, in which he generally succeeds.

Colonies.

TAXATION IN VICTORIA.—In the year 1863, with a population of 574,331 souls, and with a tariff which comprehended only fifteen dutiable articles, there was collected, at the Victorian Custom House, £1,175,659, while in the current year, with a population of upwards of 700,000 souls in the colony, it is estimated that there will be derived no more than £1,286,656 from that source, although the list of commodities subject to taxation is now as lengthy as it was formerly brief. It was confidently anticipated by the advocates of the new tariff that the duties levied under it would produce in the year 1867, £470,155. They actually yielded no more than £306,940, or upwards of 33 per cent. below the estimate. The weight of taxation was intended to fall upon articles of luxury, but the duties on plate, jewellery, silk, carriages, &c., contributed only £17,152, whilst the duties levied upon the necessaries of life amounted to £290,630.

REVENUE OF VICTORIA.—The *Melbourne Argus* says:—"The state of the revenue, even if we take the most favourable view of it, is an emphatic condemnation of the anti-immigration policy which has been pursued in this colony for the last few years. The tendency of the public income, under the existing state of things, is towards a decrease, because the growth of prosperity keeps pace with the growth of population, and where this is arrested there is not only a check to the former, but a retrograde movement on its part; and with declining prosperity there is a gradual contraction of the ability of the people to consume dutiable articles. On the other hand, the public expenditure exhibits an inevitable tendency towards an increase, for every year reveals the necessity for the execution of important public works, such as railways, reservoirs, jetties, &c. But if our population were annually augmented by the arrival of 40 to 50,000 industrious emigrants from the mother country, we should speedily witness a wholly different state of affairs. Each of these, besides becoming a producer of so much wealth and a contributor to the general welfare, would be a consumer of commodities liable to taxation, and would furnish his quota to the imports levied by municipal and other bodies for local improvements."

Forthcoming Publications.

SCIENTIFIC OPINION.—On the 4th of November the weekly publication of *Scientific Opinion* is to be resumed under the same editorial direction as formerly.

Notes.

LOCAL SANITARY MUSEUM.—A sanitary museum, forming a department of the Town Museum, is just on the point of being opened at Brighton. The museum is principally due to the efforts of Mr. W. E. C. Nourse, a medical man of that place, who has been kindly aided by Mr. Thomas Twining, a vice-president of the Society of Arts. The articles already arranged afford instruction as to the building of cottages and model lodging-houses; also as to fittings and materials for the same. In the food class numerous diagrams are nearly ready, and many instructive samples are shown. In the sanitary class a number of interesting diagrams are displayed, besides ventilators, contrivances to prevent accidents, &c. Mr. Nourse, whose address is 11, Marlboro'-place, Brighton, would be glad to receive from inventors and others, specimens or diagrams of objects suitable for exhibition; and in an interesting report which he has recently laid before the Committee of the Brighton Sanitary Association, he asks for the aid of all interested in such matters, in procuring specimens for this useful museum.

THE BRENNER RAILWAY.—The traffic on the railway over the Brenner pass has increased considerably since the opening of the line in 1867. In the month of August, 1868, the total number of passengers was 82,786; and of merchandise, 382,407 quintals. The greatest number of passengers in a day was 4,425, on the 9th of August; the largest quantity of merchandise was 21,154 quintals, on the 14th; and the least on the 2nd, 1,727 quintals.

Patents.

From Commissioners of Patents' Journal, October 2.

GRANTS OF PROVISIONAL PROTECTION.

Advertising match boxes and spill holders—2766—J. Aub.
Aerial propulsion, apparatus for effecting—2680—J. M. Hunter.
Annealing ovens and kilns—2826—J. Fenwick.
Bale ties and wrappers—2714—J. I. Campbell.
Boilers—2658—A. Lupton.
Boilers—2774—J. Millward.
Boilers, preventing incrustations collecting on the sides, &c., of—2728—G. White.
Boot and shoe straps, &c., ornamenting—2796—A. C. Henderson.
Bottles, stoppers for—2708—J. Adams and H. Barrett.
Bottles, &c., casings for—2674—E. Richardson.
Braces, &c., fastenings for—2722—E. L. Parker.
Brick-making machinery—2762—J. Burdett.
Caps or bonnets—2812—A. W. Rodger.
Carbonic acid, generating—2820—F. Seebohm-Ulzen.
Carpets, printing—2690—J. Wilkinson, jun.
Carts, &c., apparatus for raising agricultural produce on to—2736—T. Perkins.
Cotton, &c., apparatus employed for grinding cards used in the preparation of—2678—J. and T. Tattersall and T. Richmond.
Cotton, &c., bleaching—2675—H. Potter.
Cucumbers, &c., machinery for slicing—2724—S. Grafton.
Doors and windows—2684—W. S. Fletcher.
Electric currents, producing and applying—2740—I. L. Pulvermacher.
Envelopes, instantaneously opening, and attaching them to the letters they contained—2778—A. M. Clark.
Fabrics, manufacturing certain colours employed in printing—2784—A. A. Lejeune.
Fire-arms, breech-loading—2716—W. C. Green.
Fireplaces—2770—T. E. Clarke.
Floor dog or cramp—2738—R. Banks.
Fluid meters—2752—G. Davies.
Fluid, raising, discharging, &c.—2300—C. F. Waldo.
Fog signals, placing and securing upon the metals of railways—2792—J. Challender and B. Kitchen.
Fuel, artificial—2742—W. H. Crispin.
Furnaces—2688—J. Fieldhouse.
Gas, apparatus for manufacturing—2700—W. C. Holmes.
Gas engines—2808—G. Bower and W. Hollinshead.
Gas meters—2699—F. Hudson.
Gelatine, manufacturing—2696—J. C. Martin.
Gloves, &c., cleaning—2668—G. Ker.
Gunpowder mills, &c.—2754—V. Wanostrocht.
Hair stuffing, substitute for—2818—W. R. Lake.
Horn, &c., stamping or embossing—2782—G. Davies.
Horses' shoes, &c.—2768—E. Cottam.
Human body, apparatus for introducing powders into natural or pathological cavities in the—2729—A. M. A. Laforegue.

Iron and steel, coating—2816—J. C. Coombe and G. Gregg.
Kilns for burning bricks, &c.—2750—U. A. Masselon.
Ladders, extension—2776—L. B. Covert.
Land or soil, crushing, &c.—2638—W. C. Cambridge.
Locks—2764—A. J. Fraser.
Looms—2686—J. Greenwood.
Looms—2704—W. R. Lake.
Looms, supplying web without stoppage to—2788—J. Maynes.
Meat, preserving—2619—G. H. Barber.
Millstones, dressing—2670—B. Corcoran and W. Dunham.
Motive-power, obtaining—2772—G. Warsop.
Needles, &c., papering and packing—2689—H. Walker.
Nippers, cutting—2694—N. Thompson.
Oils, &c., apparatus for feeding and burning—2748—C. E. Brooman.
Oils, &c., treating—2356—F. Lambe, A. C. Sterry, and J. Fordred.
Pearl ornament, suitable for necklets, &c.—2756—E., E. B., J., and H. Stokes.
Pendulums—2822—M. A. Soul.
Ploughs—1829—W. E. Gedge.
Presses for stamping letters, &c.—2662—L. P. Hébert, L. A. Moulin, J. P. Couinck, sen., and E. Couinck, jun.
Presses for the manufacture of cement tiles, &c.—2794—A. Cruls.
Projectiles—2692—W. R. Lake.
Pumps—2780—A. V. Newton.
Railway breaks—2682—W. Naylor.
Railway stop blocks—2718—F. Preston and R. C. Ross.
Rotary engines—2758—S. B. Tucker.
Sewage apparatus—2666—J. Yule.
Sewing machines—2358—C. A. McCurd.
Silk, skeins of, separating and dividing, preparatory to winding—2664—B. Burrows, sen.
Steam engines—2697—J. and W. Badger.
Steam engines—2779—E. Wood.
Stoves, portable—2806—J. Roberts.
Sulphate of magnesia or epsom salts, manufacturing from dolomite or magnesium limestone—2373—F. Winsor.
Swimming glove or apparatus—2618—R. D. Morgan.
Telegraph and signal posts—2672—W. McGregor.
Thread-winding machines, &c.—2824—J. Hetherington.
Trees, &c., uprooting—2720—J. Griffiths.
Umbrellas and parasols—2804—B. Gardiver and T. H. Faulkner.
Umbrellas, &c., stands for—2728—D. Jones.
Warping or beaming machines—2802—J. Bullough.
Water, raising—2632—G. S. Dracopulo.
Wood, &c., extracting pitch, &c., from—2676—J. Martin.
Wood-cutting machinery—2798—B. Dobson and W. Slater.
Wool, treating—2710—C. E. Brooman.
Wool, &c., spinning and twisting—2698—J. Ladley.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

Looms—2927—C. Heptonstall.
Steam engines, &c.—2953—H. Davey.

PATENTS SEALED.

1123. J. S. Crosland.	1186. C. G. Hill.
1125. J. Wallace.	1187. V. Gallet.
1127. J. Harwood.	1188. E. Brasier & J. E. Hodgkin.
1128. C. W. Baldwin.	1193. J. Plews.
1135. T. Row and S. Scott.	1194. J. Rae and G. Miller.
1137. H. Cochrane.	1195. A. H. Still and D. Lane.
1141. A. and H. Illingworth.	1196. W. B. Robins.
1142. F. A. E. G. de Massas.	1197. J. H. Whitehead.
1143. F. H. Greenstreet.	1198. G. T. Bousfield.
1144. R. Nabbs.	1199. J. Leeming.
1146. G. Davies.	1200. W. E. Newton.
1153. R. Moreland, jun., and D. Thomson.	1201. R. A. Wright.
1154. C. H. Gardner and J. Bickerton.	1202. L. Verstraet.
1158. J. Perry.	1212. S. W. Huntington.
1163. J. Casson.	1216. A. Barclay.
1166. H. J. Ditmars.	1239. W. S. Fletcher.
1167. A. L. Holley.	1262. A. V. Newton.
1168. W. Nall.	1277. C. D. Abel.
1169. E. H. Newby.	1300. J. H. Johnson.
1172. C. W. Siemens.	1338. A. Carter.
1175. J. Armstrong.	1367. J. Atkins.
1177. D. Lane.	1406. B. Heathfield.
1179. J. Bedford.	1422. J. H. Johnson.
1181. J. James and T. Jones.	1583. W. A. Brown and R. L. Jones.
1183. W. R. Lake.	2232. J. H. Johnson.
	2344. R. Newton.

From Commissioners of Patents' Journal, October 6.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

2507. J. and G. Addenbrooke and P. A. Millward.	2542. J. and F. J. Jones.
2515. J. H. Johnson.	2518. J. Dodge.
2518. S. Faulkner.	2529. H. A. Bonneville.
2514. R. Willacy.	2976. T. B. Heathorn and J. H. G. Wells.
2550. R. Tonge.	

PATENT ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID,
2914. F. Johnson.